“SUPPLY CHAIN MANAGEMENT PRACTICES OF AUTO ANCILLARY UNITS: A STUDY WITH REFERENCE TO PUNE REGION.”

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1) INTRODUCTION

The A**utomotive industry** has been accepted as a major driver of growth of nation's economy. The automobile industry is called as "the industry of industries". Since it uses outputs of nearly all manufacturing industries and supports upstream (steel, mining etc.) and downstream industries (finance, insurance, after market etc.).

Indian auto industry is making fast progress since liberalisation of policies took place in mid 90s. **Government of India & SIAM** (Society of Indian Automobile Manufacturers) unveiled the second **Automotive Mission Plan: 2016-26** at the 55th SIAM Annual Convention. **Automotive Mission Plan** is collective vision of Government of India & Indian auto industry. Aims to put the automobile industry in the league of **top three nations** in engineering, manufacturing and export of vehicles and auto components. Setting a roadmap for the automobile industry for the next 10 years (**Economic Times 02 September 2015).**

In **Automotive manufacturing**, there are complex, highly-sophisticated supply chains consists of **OEMs** (Original Equipment Manufacturers) and **Auto ancillary organizations**. (Also referred as Auto Component Suppliers.)

The auto ancillary industry & Tierization of supply Chain: Members of the supply chain are grouped in **tiers**, with the most important members classified as **Tier one** suppliers, which typically supply critical components or carry out sub-assembly work before final assembly. In some cases, tier one suppliers may complete the manufacturing process and the lead company acting as a marketing organization.

Tier 1 suppliers have their own **tier 2** suppliers who procure parts for assembly units- they are the companies with own production or assembly plants establish near tier 1 suppliers. **Tier 3** suppliers are local home companies (manufacturing capacities for small simple parts, raw material suppliers), which fulfill mainly quality and volume conditions of 2-Tier suppliers, some supplies directly to Tier-1.

With many Multinational companies set up their plants in India and growth in the market, **auto ancillary industry** has witnessed huge capacity expansion and modernization initiatives post liberalization phase. The entry of global manufacturers enabled **introduction of new technology,**

new products & new processes. Further, these changes have added different dimensions to the traditional approaches in almost every function of business. Certain new concepts, such as **Vendor Development**, **VMI** (Vendor managed inventory), **SCM** (Supply Chain Management)**,** Forward/ Backward **integration of production processes, Outsourcing** etc. are being adapted by major companies.

It has been stated that these concepts will lead to higher efficiency i.e. reduction of cost with high quality and greater speed in responding to customer requirement.

Emerging challenges for Indian Auto Ancillary Companies

There is tremendous pressure on Auto OEMs to produce vehicles as well as fulfil the requirement of customers. Margins are likely to come under pressure in the long term because as competition increases, manufacturers will find it difficult to increase prices and will try to cut costs. The burden will eventually fall on **auto ancillary** players. Pace of indigenization level of most companies are increasing, in an effort to reduce their currency losses and remain competitive.

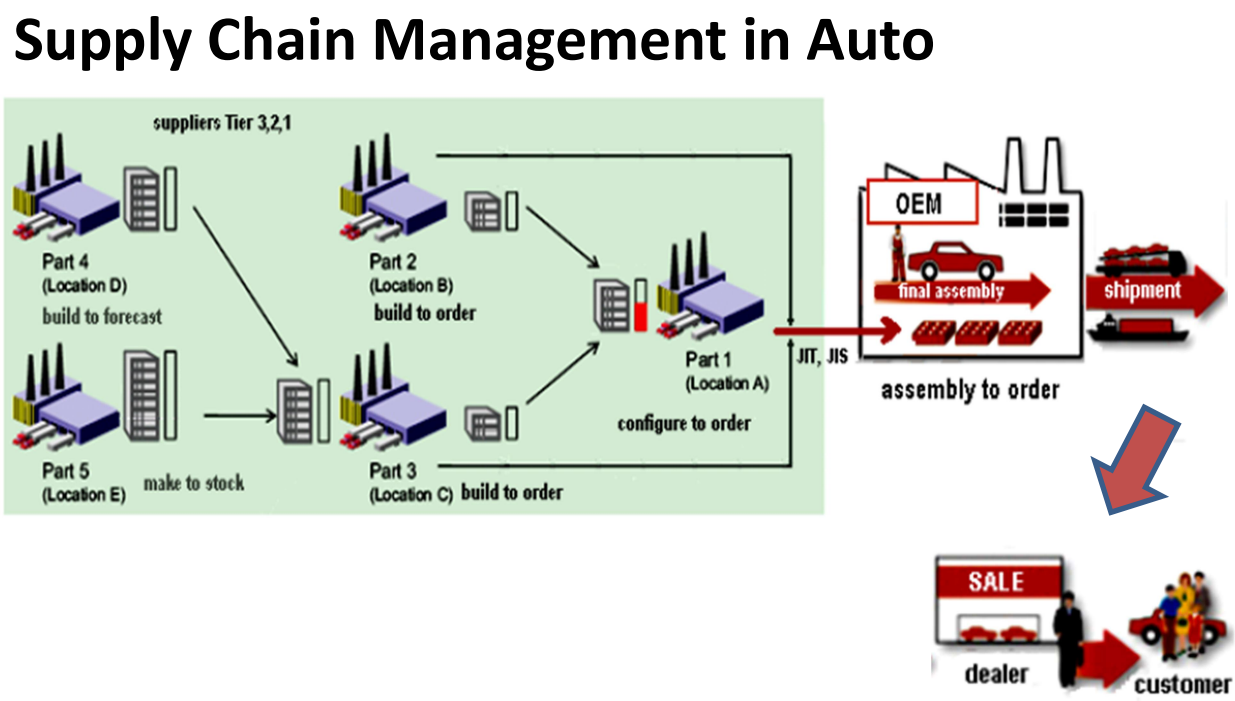
In Tierisation of automotive chain, where number of internal & externals entities are involved, **Management of Supply Chain** becomes very important for delivering superior value to the end customer in an effective & efficient manner. Tier 2 & other tiers are identified as **weak links** in whole Automotive supply chain for various reasons. **(3rd MSME Summit- June 13, 2014, Auto Ancillaries Sector Analysis Report- Feb 03, 2016 equitymaster.com).**

Indian auto ancillary suffered from poor quality. While this hold true for the unorganized sector, the organized sector has been resorting to increased automation to reduce the defect level. To take India to the next leap of manufacturing revolution, individual organisation need to build abilities to acquire & develop new technologies, reduce production costs, cut down delivery time & improve customer service.

Supply Chain Management relevant practices for Auto ancillary.

Supply Chain Management encompasses every effort involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer. Supply Chain Management includes managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer. (**The Supply Chain Council, U.S.A.)**

SCM practices such as: a) Tierization of Supply chain, b) Setting up plant closer to Tier1/OEM (Vendor park), c) Vendor Managed Inventory, d) ISO9001 Quality Management System, e) Flexible manufacturing System, f) Integration of Supply Chain, g) Early involvement of vendor in development, h) Supplier selection process, i) Outsourcing, j) Ware house management etc. are aggressively followed by Auto Multinational companies.



Study of SMEs is needed for following reasons-

a) Introduction of **Supply Chain Management** practices for Indian automotive & auto ancillary companies is new phenomena; brought by MNCs. Small firms are not aware of the potential benefits & problem associated with implementing effective supply chain practices. Therefore, **further knowledge regarding relevance of supply chain management practices in the context of SMEs is needed.**

b) SMEs are under pressure to improve. They would like **to know what areas to concentrate on for successful implementation in small organisations**. They would like to learn from the experience of those who have already begun the process.

c) Most of the organisations implement ISO9001 or TS16949 Quality Management System, as demanded by customer organisation. Effective implementation results into better supply chain**. It is necessary to study the effectiveness of ISO system in these organisations with respect to Supply Chain Management**.

d) Organisation such as ACMA, (automotive component manufacturer's association), CII (confederation of Indian industry) & other professional organisations are supporting auto ancillary industry to upgrade and become competitive. **It is necessary to understand their approach and effectiveness.** This will generate knowledge for the benefits of others.

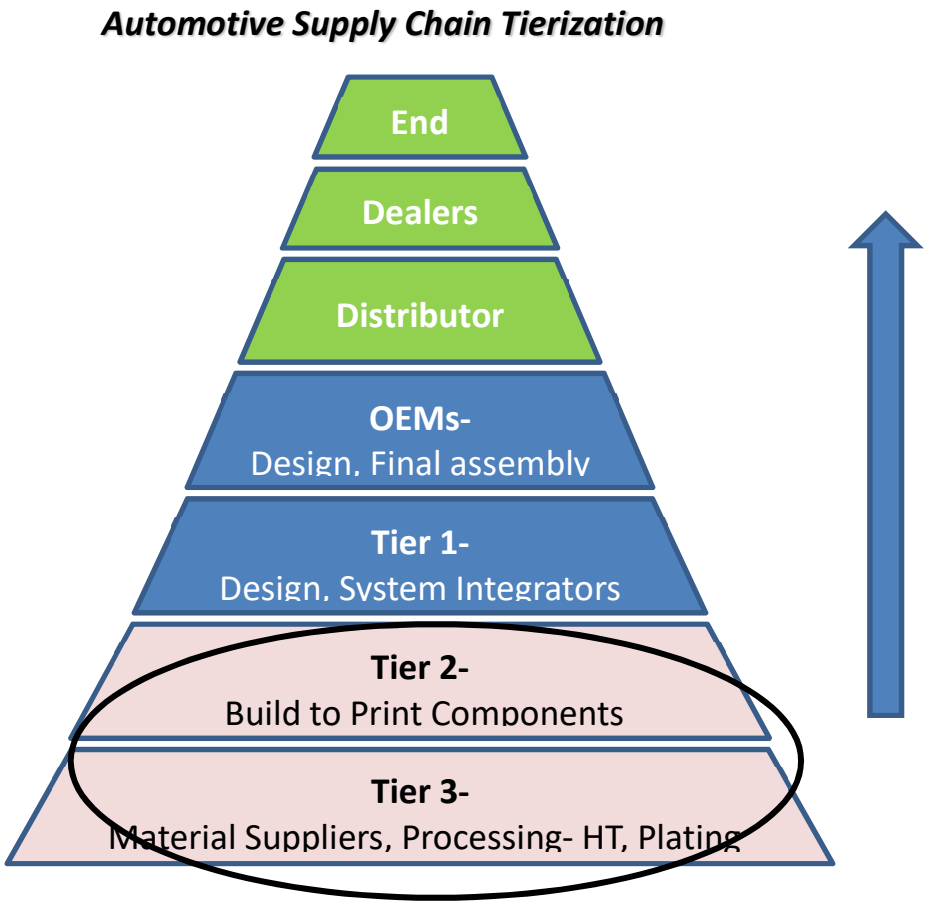
e) Study will focus on identifying possible **problem areas** with reference to relevant supply chain practices, in which improvements could stimulate competitiveness among Indian auto component manufacturers.

2) REVIEW OF LITERATURE

a) Number of books are available on Supply Chain Management to understand concepts and practices.
b) Data on Indian Auto ancillary industry is available with local bodies (Government & private)
c) Research articles on Supply Chain Management practices in Indian context are available on internet and library.
d) Work done by **ACMA** (automotive component manufacturers' association) in the field for improving the Auto industry with the help of Department of Heavy Industry, UNIDO.
e) Central Library of SRTMU research studies such as "Towards improving the productivity & performance of technical entrepreneurs from small scale industrial sector" by Maruti Sopanrao pawar under the guidance of Dr S P kallurkar and others.

Apart from this related literature from national & international studies will be reviewed as per the requirement of the studies.

Study of these literatures has helped the researcher to understand the Supply Chain Management practices followed by auto OEMs and potential barrier for auto ancillary industry. Further, the review of literature assisted in designing research methodology, selecting the sample techniques, analytical tools, framing of hypothesis, interpretation of results etc.



Some of the key finding & learning are as follow:

ACMA & CII are running cluster program to improve the capability of component suppliers. As per Mr. Ramesh Suri, Vice President, ACMA. "The industry and government will need to collaborate in helping companies manage the challenges, especially handholding **Tier 2 and Tier 3, the weakest** link in the entire automotive value chain." **3rd MSME Summit- June 13, 2014**

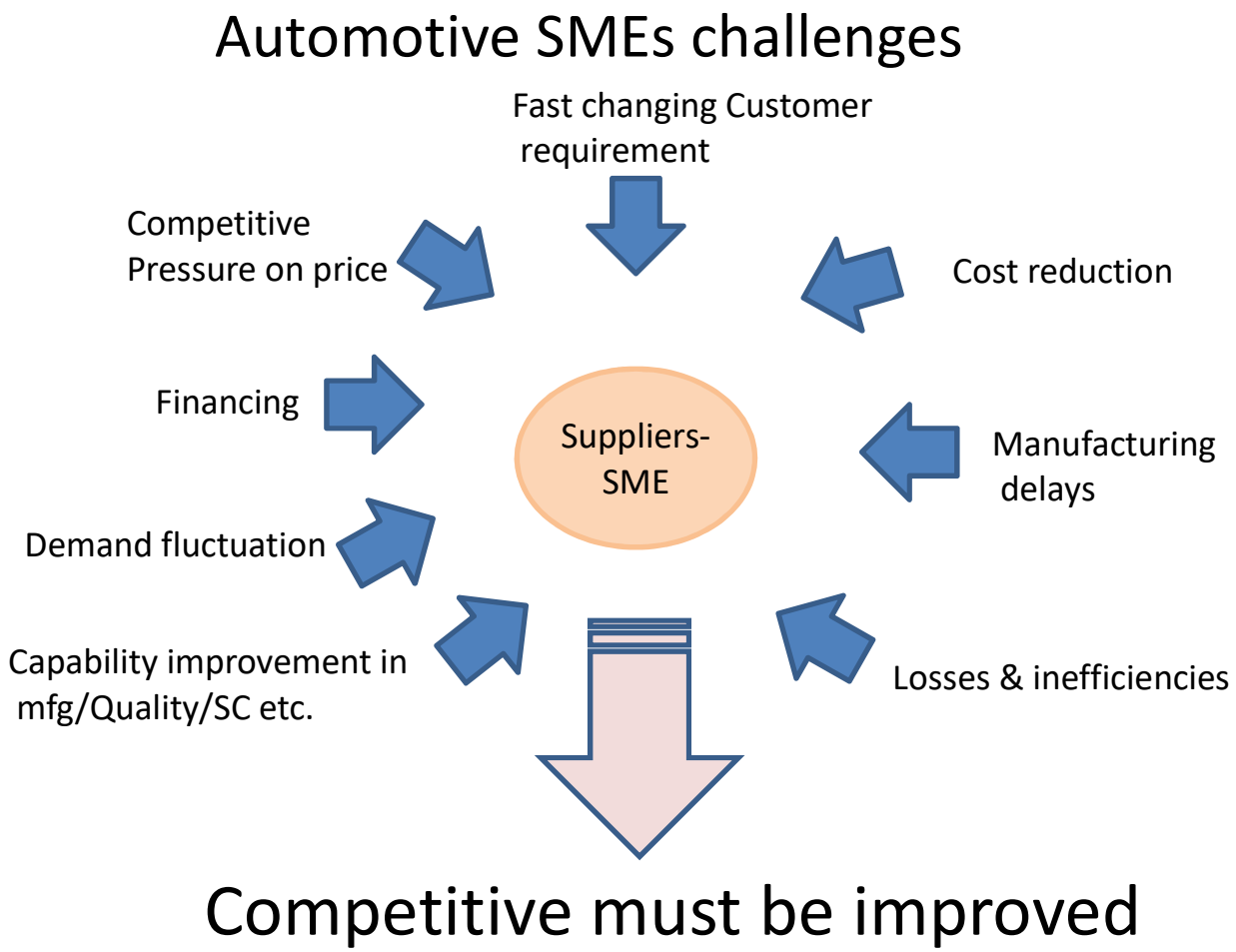
Arvind Balaji, ACMA president and joint managing director of component maker Lucas-TVS, said, the rising focus of international players means **greater competition for quality and market share** for the domestic players, many of which have a tie up with foreign companies. **Business Standard: February 08, 2016.**

The auto ancillary industry witnessed huge capacity expansion and modernization initiatives post liberalization phase. **Technological collaboration, equity partnership** was common affair. The global auto giants have brought along the international component suppliers in India. Tier one organizations in a supply chain form close working relationships with the lead company.

According to "Quality Digest," organizations are developing a competitive advantage by **integrating key suppliers** in cooperative alliances or formal partnership so that both organizations work to a common goal.

The fortunes of the auto ancillary sector are closely linked to those of automotive companies. Demand swings in any of the segments (cars, two-wheelers, commercial vehicles) have an impact on auto ancillary demand. Demand is derived from original equipment manufacturers (OEM) as well as the replacement market. The OEM market is very competitive and component manufacturers have to compromise on margins to bag bulk orders. Moreover, **delivery schedules and quality standards** have to be adhered to very strictly.

Tier I manufacturers enjoy advantages over Tier II & Tier III suppliers in getting orders with the help of their designing, manufacturing & development skills. Since Tier I got the order directly from auto makers it helped them to recover the investment quickly and enjoyed better profit margins. Majority of Indian auto component firms belong to the lower tier of industry value chain and traditionally know for poor quality.



Some of the measures available for Indian ancillary industry to become Global supplier:

- Management decision to adopt good Supply Chain practices such as
  a) Early involvement in development process, b) Integration with chain, c) VMI,
  d) Use of IT, e) Supplier development programs, f) Outsourcing- Make or Buy etc.
- Adopt global vision. This will help SME sector to upgrade talent, employ skilled resources and invest in quality, sustainability and continuity of supplies. Short term success in price & delivery agreements may no longer be adequate to earn a place in the global supply chain.
- Employ Automation to convert strategies into flawless execution.
- Address the basics hygiene factors of Supply Chain such as Quality, Cost and delivery especially among the tier 2-3-4 besides tier-1 companies and strengthen the capacity and capability among supply chain.

3) RESEARCH METHODOLOGY

3.1) Objectives of the study

Researcher aims at achieving the following objectives:

- To study the current state of SME (Auto component) in terms of addressing basic hygiene factors such as **Quality, Cost & Delivery.**
- To identify the effectiveness of implementing **ISO 9001 Quality Management System certification by 3rd party.**
- To study the modernisation/technological **upgradation** done by SMEs.

3.2) Hypothesis:

1: SMEs lacks upgradation of knowledge & skill in addressing basic hygiene factors such as Quality, Cost & Delivery.

2: ISO 9001 Quality Management System certification by 3rd party do not add any value in improving the SME's performance. (3rd party certification of ISO 9001 Quality Management System is one of the SCM practice)

3: There is low investment in modernization of technology & processes by SMEs.

3.3) Research Design

Research design is the plan and structure of investigation so conceived as to obtain answers to research question. The design provides answers for such questions as these: What techniques will be used to gather data? What kind of sampling will be used? How will time & cost constraints be dealt with? **(Donald R Cooper: 1999)**

Data will be collected from primary and secondary sources for this research.

Sources of secondary data

Under this, secondary data is explored (**Exploratory studies)** from different sources as given below. This has helped researcher to form hypothesis.

a) Library, Books, Newspapers & reading materials

Researcher will visit various libraries to read books, journals & articles in the newspaper related to the subject of SCM and thereby collect his secondary data.

b) Reports of professional bodies such as ACMA, CII etc. who are supporting auto ancillary firm to upgrade.
c) National & international journals
d) Internet web site
e) Research papers

Sources of primary data:

- Personal interviewing & telephonic interview

The researcher will conduct personal interviews & telephonic interview of various officers & employees, who are involved in implementing SCM practices in their companies.

- Questionnaire method

Questionnaire will be designed to seek relevant information from people, connected with auto ancillary companies. Researcher will circulate the questionnaire among senior officials, who will have the knowledge to answer the questions.

3.4) Sample design

Sampling is the strategy of selecting a smaller section of the population that will accurately represent the patterns of the target population at large. The main purpose of the sampling is to improve quality of data by focusing on a smaller group.

a) **Sampling Method**: Stratified Random sampling is chosen as the sample selection procedure. The research is about Automobile Sector in Pune region. Pune region has been selected as there are plenty of ancillary units, the researcher finds it convenient to focus on the region on the grounds of vicinity.

b) Sample Size: As per RoC (Registrar of Company)-Pune, there are **537 nos**. firms registered under main categories of Manufacturing (Machinery & equipment) + Manufacturing (Metals & Chemicals & Product thereof) having Authorised capital/ Paid up capital upto 10 crores. These firms are having processes pertaining to various category of auto components such as Forging, Casting, Painting, Stamping, Precision Machining, Coating etc. **(Company Master Data upto 2015 Maharashtra at mca.gov.in)**

The researcher will select **minimum 10%** firms who are suppliers to **Tier 1** to make a survey of implementation of SCM practices.

As per MSMED (ministry of micro, small & medium enterprises development) Act 2006, investment in plant & machinery up to 5 crores categorized as small enterprises and 10 crores categorized as **medium enterprises.**

3.5) Data Collection

Researcher will seek response through questionnaires from **Owners/CEO or key Senior employees** responsible for implementation. Wherever possible researcher will meet & have one to one interview with concerned persons.

Research will use his contacts for getting the response.

3.6) Scope & limitation

Study will cover SMEs (Tier 2 & Tier 3) situated in & around Pune region, those who are suppliers to Tier 1 and/or OEMs.

a) Since samples are selected from Pune region, the findings cannot therefore be generalized to all auto component manufacturers in India.
b) The result will be derived on the basis of opinions expressed by respondents from selected firms in automotive component industry in & around Pune.
c) Supply chain problems have been identified through literature review and in depth semi structured interview with respondents at senior management level at two automotive assembly plants in India only. The implication is that not all supply chain problem may have been identified.

4) DATA ANALYSIS & INTEPRETATION

The raw data will be tabulated, processed and analyzed using the appropriate statistical technique. Its interpretation will be done. The researcher has used secondary data in formulation of research problem and identification of research objectives extensively. Due care will be taken to assess such data for its suitability for the study and adequacy in the context of the problem which researcher is studying.

5) CONCLUSIONS & SUGGESTIONS

Conclusion will be drawn based on outcome of data analysis in relation to Hypothesis & Suggestions will be made based on the results of analysis & discussion and study of relevant literature.

Chapterisation Plan:

1. Introduction
2. Review of literature
3. Research Methodology
4. Data analysis & interpretation
5. Conclusion & suggestion
6. References & Bibliography

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